The Driving Offender Treatment Scale

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Executive Summary

The Driving Offender Treatment (DOT) scale was developed to assess change in beliefs and attitudes that support further traffic offending. Currently, lengthy interviews are used to obtain this information. A standardised scale would collect this information more consistently and in a shorter period of time.

If such a measure is to be used it is necessary that it is both reliable and valid. Test reliability indicates the extent to which individual differences in test scores are due to real differences rather than due to chance errors. Test validity indicates the extent to which a test measures what it is designed to measure.

Two studies looked at reliability, and two at validity. The reliability studies looked at:

- internal consistency ; which was found to be satisfactory, and

- consistency over time; while somewhat low at .75 this was acceptable. For traffic offenders retested after 3 months, scores had a correlation of .66.

The validity studies found significant correlations between the scale and:

- past traffic offending measures, particularly Excess Breath Alcohol; and

- subsequent traffic offending (survival time to re-conviction for a DWD offence)

The scale would be useful in identifying cognitions suitable as targets for change and as a measure of pre to post treatment change. It could also be used to assess driving offenders for the likelihood of offending, although risk models have been developed which are more accurate.

Introduction

Why Are Driving Offenders Important?

Driving offenders are important because of their contribution to road fatalities and law enforcement costs. In 1996, 515 people died on New Zealand roads giving New Zealand the sixth worst road safety record of all OECD countries. Traffic crashes are the leading cause of death in young adults, with even greater numbers being permanently disabled. Among OECD countries, New Zealand crash statistics indicate that it has the fifth worst road toll for drivers aged between 15-24; 27% of the drivers killed and 35% of the drivers injured were from within this age group even though only 15% of the population is aged 15-24. (Ministry of Justice; 1997)

The costs through law enforcement are equally substantial. In 1997, over 138,000 offenders were convicted of traffic offences. Over 7,600 had driving while disqualified (DWD) and 18,000 had alcohol related driving offences as their most serious offence. When sentences are considered, the cost to the Department of Corrections associated with driving offenders becomes apparent.

 Over:

- 4500 were given periodic detention;
- 1200 were given supervision; and
- 1300 were sentenced to prison (Bakker 1998).

Over 1000 of the people sentenced to prison had a DWD offence. While it is clear that most disqualified drivers have a number of alcohol related driving convictions (over 90% became disqualified by way of alcohol impaired driving, (Bailey 1993), DWD offences are, for most of these individuals, more numerous. This strongly suggests that DWD is a significant problem in its own right. Indeed the lack of effectiveness of current interventions is seen in that of 7669 1997 DWD offenders 4701 (61%) had at least one previous disqualified driving offence and 1173 (15%) had more than five previous offences.

A key question is "why do these people continue to drive despite the potentially severe consequences of doing so (e.g. up to five years imprisonment)?"

What is Important in Treating Disqualified Drivers?

Several characteristics of disqualified drivers are considered relevant to their offending, including:

- a psychological "need" or compulsion to drive (Mirrlees-Black 1994, Donovan 1983);
- emotional changeability (Donovan 1983);

- thrill seeking (Donovan 1983);
- overt and covert expressions of anger (Donovan, Marlatt and Salzberg 1983);
- feelings of depression (Donovan, Marlatt and Salzberg 1983); and
- acute and chronic stress (Tsuang, Boor, & Fleming 1985).

These characteristics have led to suggestions that driving offenders can be classified into subgroups that reflect different treatment needs.

Sub - Groups of Driving Offenders

Donovan, Marlatt and Salzberg (1983) identified several groups of drivers based on measures of alcohol use, demographic information, personality and attitudes to driving. One group was characterised by high levels of depression and resentment, together with low levels of assertiveness, emotional adjustment and perceived control. A second group was characterised by the highest levels of driving related aggression, competitive speed, sensation seeking, assaultiveness, verbal hostility and irritability. A third group scored highest for driving to reduce tension and had low levels of depression and resentment.

A similar study was conducted by Wells-Parker, Cosby and Landrum(1986) who used traffic and criminal history to establish subgroups of drivers. They found five groups among which were:

- young "risky" drivers who had few alcohol related convictions

- a small group of chronic offenders who had large numbers of license violations; and

- a small chronic group who had large numbers of alcohol related offences.

One reason for the relative ineffectiveness of interventions may be a failure to modify treatment to suit the characteristics of these subgroups of drivers. The interventions employed for the license violators would be expected to be different than for those with alcohol related convictions. But, before adequate intervention strategies can be found, a greater degree of clarity about the causal relationships of the different characteristics and the subgroups of driving offenders is necessary. Understanding and measuring these will help focus intervention targets and strategies.

Models of Driving Offending

Conceiving of DWD offenders as a separate group and targeting self-control of driving behaviour may therefore provide a more effective treatment than traditional alcohol treatment. In part, this is because the problem may not be with alcohol. It may well be that these offenders are using driving to cope with problems, albeit inappropriately, or because driving in its own right has become overly important and reinforcing.

As noted earlier, Donovan, Marlatt and Salzberg (1983) found five sub-groups of drivers distinguished by scores on a variety of demographic, personality, attitudinal and

alcohol measures. They developed a cognitive-behavioural model of high-risk driving and suggested that drinking and driving both may be expressive of the same psychological states, typically related to tension and anxiety over personal competence and power. In their hypothetical model, they considered the individual most at risk to be "a young man characterised by a high level of underlying hostility and an aggressive disposition who drinks heavily and frequently, and who is deficient in those social skills involved in the appropriate expression of anger and management of stress, frustration or depression."

The individual is considered not to possess the necessary skills to cope with acute emotional stress, its precipitating situation or the resultant negative emotions. This is seen to reduce the person's sense of control leading to increased levels of stress, anxiety, hostility and helplessness, and decreased self-esteem and motivation to exert control. Drinking and/or driving are seen as a means of dealing (albeit inadequately) with negative affect. The hypothetical model proposed by Donovan is presented in Figure 1.

Deficient Coping Skills (Inability to Manage Anger, Stress or Depression)

or

Hostile-Aggressive Trait Disposition

and

High Quantity - Frequency of Alcohol Use

↓

Interpersonal or Intrapersonal Stress

↓

Unsatisfactory Resolution of
Stressful Situation

↓

Resultant Increase in Frustration and Tension;
Decrease in Self-Efficacy and Personal Control

↓   ↓   ↓

Drinking with the Expectation of Tension   Driving with the Expectation of Tension
Reduction and Increased Personal Control   Reduction and Increased Personal Control

↓   ↓   ↓

Increase in Actual Level of Covert and Overt
Hostility - Aggression

↓

High Risk Driving with Increased Probability
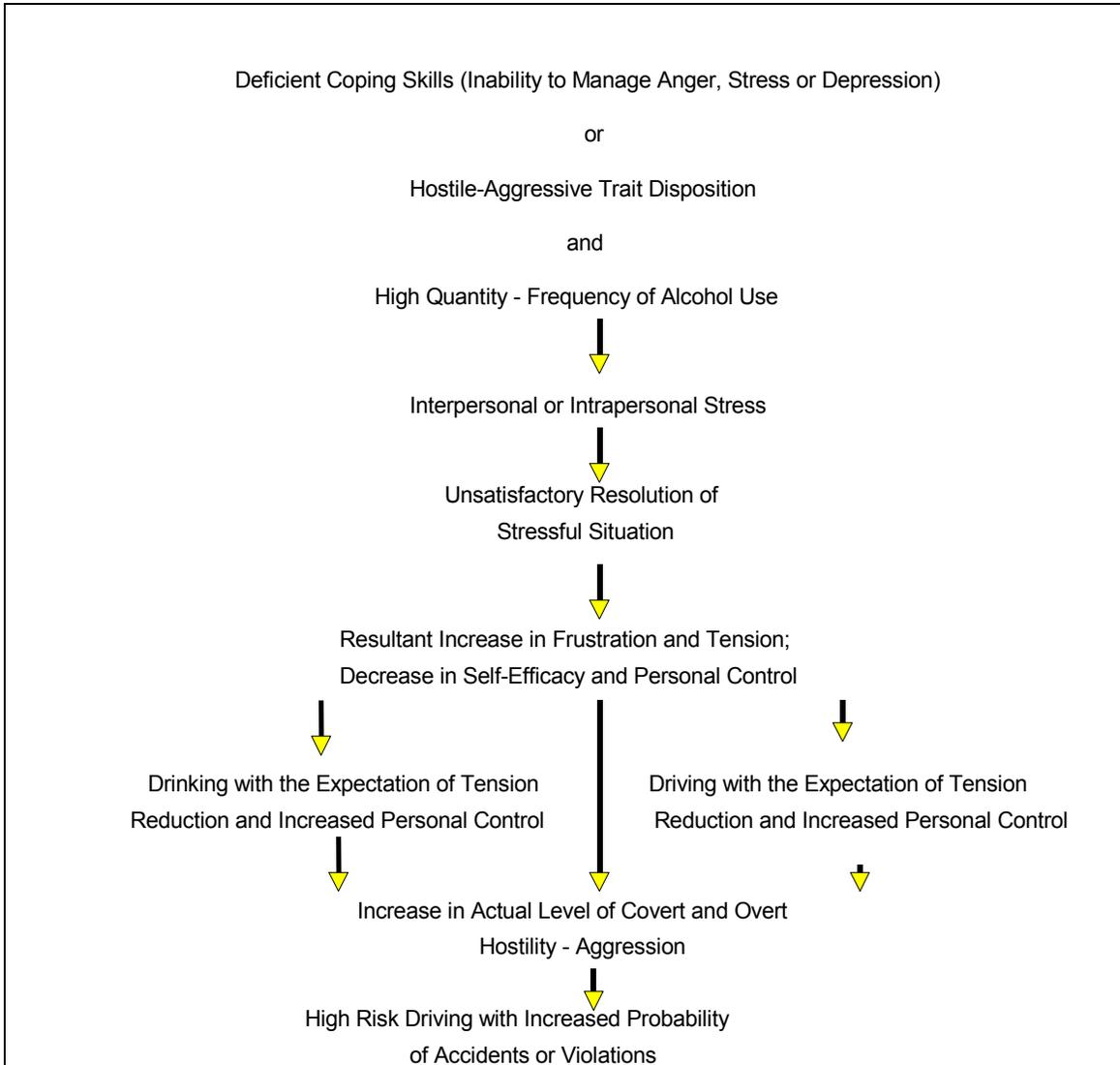of Accidents or Violations

Figure 1: Hypothetical Cognitive Behavioural Model of Driving Offending.
(Donovan, 1983).

In this way Donovan et al (1983) see the availability of a motor vehicle as a means of providing an alternative, although inappropriate, means of coping with a stressful situation and/or the negative emotions arising from it. Essential in their model is the view that the persons cognitions (thoughts and beliefs) and emotions play an important part in any decision to drive. One flaw in the Donovan et al model is the lack of detail about such cognitions.

Wilson (1996) attempted to clarify the role of such cognitions in DWD offenders. She developed a fifteen stage model (see Appendix 1) of the re-offence process of repeat DWD offenders. The model identified the sequence of psychological, behavioural and environmental factors that contribute to DWD re-offending. Offenders could move through several alternative pathways before they came to re-offend. Included among these stages were six that specifically focused on the thoughts that were related to offending. For example, often when deciding whether or not to drive, cognitive distortions[1] allowed the offender to view their upcoming driving as not their responsibility. Such thoughts allowed the driver to move to the next stage of the re-offending cycle. Wilson considered that

> "these types of cognitions appear important to how, and how rapidly, the offender proceeds down the offence chain to eventual re-offending."

> *and*

> "if a high level of driving related distortions were present in the offence chain they were more likely to… act as if they were not disqualified. Distortions at this point also meant that the offender was likely to re-offend more rapidly than an offender who employed few distortions."

While the specific number of offenders who selected different pathways was not stated, Wilson provides substantial support for cognitive distortions being important in the re-offending of DWD offenders.

Relapse Prevention as a Treatment Option

It is clear from the descriptions of both Donovan and Wilson that many driving offenders have little perceived control over their offending. As such they have much in common with people who have difficulty with addictions and compulsive behaviour. Relapse prevention, developed by Marlatt and his colleagues, provides a number of strategies and methods for the treatment of addictive and compulsive behaviour (Marlatt & Gordon, 1995; Marlatt, Baer, Donovan, & Kivlahan, 1988; Marlatt, Curry, & Gordon, 1988; Marlatt & Gordon, 1991). Relapse prevention was originally developed as a means of enhancing a client's self management skills in order to maintain treatment-produced behaviour change, but it has also been adopted as a model to guide and structure therapy. This approach was primarily developed for use with addictive

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[1] Cognitive distortions include rationalisations, minimisations, incorrect beliefs, faulty logic, denial etc which allow the offender to move closer to offending.

behaviours, such as alcoholism or smoking, where relapse rates are high. However, Marlatt and Gordon (1985) suggest that there are common components associated with the initial loss of control, regardless of the "addictive" substance or activity involved.

One of the central assumptions in the relapse prevention model is that the relapse process consists of a chain of behaviour occurring across time. This is in stark contrast to the view, held by many offenders, that relapse just occurs "out of the blue". The relapse prevention perspective implies control is possible, and has allowed a number of treatment strategies to be developed, each of which seeks to intervene at various points in the relapse chain and so disrupt the process.

There are components of disqualified driving behaviour that are similar to other appetitive behaviours (e.g., reported "need" to drive, short term gain versus long term loss, driving used as a coping behaviour etc.). A treatment approach based on relapse prevention has the potential to offer considerable advantages over the education and alcohol abuse treatments that have been tried so far.

The Driving Offender Treatment Programme

The Driving Offender Treatment programme (DOT) was developed to treat DWD offenders using relapse prevention as a model for intervention. The programme used a combination of social skills, mood management and problem solving skills to provide offenders with strategies to apply at each part of the relapse process. A full description of the programme and its evaluation are available as Department of Corrections reports and as articles in peer review journals (Bakker, Ward and Hudson 1997, 1998). In short, the evaluation showed that reconviction for disqualified driving and criminal offending had been reduced by 18% and 10% respectively. No change was made to alcohol related driving.

The programme is designed to challenge cognitive distortions and to modify these. Identifying what these are early on would be of advantage to the programme providers and possibly, to those who refer offenders to such a programme. If high-risk offenders were found to have more cognitive distortions (as suggested by Wilson 1996), or the type of distortions was related to treatment outcome, then this would provide clear treatment goals for individual offenders. If a self-report assessment instrument could be developed, this would reduce the necessity for lengthy assessment interviews as used by Wilson (1996). She required three separate interviews to ensure the accuracy of the offence descriptions. A scale might also allow untrained interviewers to refer offenders to intervention programmes more appropriately.

For the above reasons, staff of the DOT pilot programme developed the DOT Scale. The material that follows describes how the consistency and accuracy of the instrument have been tested in four short studies. At the conclusion of these, I present a general discussion.

Reliability

Introduction

The reliability of a test tells us how consistently the scale measures behaviour, attitudes or beliefs. In its broadest sense, test reliability indicates the extent to which individual differences in test scores are due to real differences rather than due to chance errors (Anastasi, 1976). Reliability is measured in two ways. In test-retest reliability, the reliability coefficient is generally obtained by giving the same test on two different occasions and correlating the scores. Correlations above .8 indicate that the test results can be generalised over different occasions and are less susceptible to the random daily changes in the condition of the subject or the testing environment. In the case of the DOT scale, a reliability coefficient of .8 would mean that differences between the scale scores of offenders represented real differences in the extent of their cognitive distortions about driving. A low reliability coefficient would indicate that offenders might differ on DOT scale scores, but we could not be confident that this was due to differences in their beliefs; differences might be a consequence of error in the scale itself.

A second type of reliability is the internal reliability. This is the consistency of responses to all items in the test. If the items are all measuring the same thing, the responses should be consistent. The inter-item consistency increases as the behaviour or belief being sampled by the items becomes more uniform.

The following two studies focus on these two measures of reliability.

Internal Reliability

Introduction

This first study provides a description of the development of the pool of scale items. Staff of the Driving Offender Treatment programme (DOT) at Rolleston prison originally developed the items. The 49 statements were developed from assessment interviews with the DOT participants. The items were tested with the original participants for comprehensibility and face validity (the items looked like they were about driving offending). On the basis of this work, 34 items were selected. The first study, described below, looked at the internal reliability, and factorial structure of the scale.

 The internal reliability of a scale reflects how well each item contributes to the total scale score. Implicit in this measure is the view that the items measure the same thing. In our case, this means that each of the items measures driving offending beliefs and attitudes. To ensure that there is only one concept being measured, factor analysis is used. Factor analysis assesses the interrelationship between the items by calculating the inter-correlations between all the items. These correlations may form distinct

clusters, or factors, which represent similarities between the items. If the DOT scale measures one construct then there should be only one factor. A test with one factor is desirable because it allows easy interpretation of the score. The assumption here is that the test predicts something that is itself a single construct. If the behaviour, belief or attitude being measured has multiple features then the test would have to have multiple factors to accurately measure it.

Method

Subjects and Procedure

The DOT scale was administered to 132 male offender subjects; 51 were members of the DOT programme tested before the programme and 81 were criminal controls who were not members of the programme. Participants filled out the scale in groups of 10 - 15.

DOT Scale

Each of the items had a numbered scale beside it ranging from 1(strongly agree) to 5 (strongly disagree). Twelve of the items were worded so that agreement indicated the absence of the cognitive distortion and the remaining items were worded in the opposite direction. The items and the correct direction for scoring are shown in Table 1. The items were totalled with higher scores indicating fewer cognitive distortions.

The scale was administered to subjects with the instructions written on the front cover stating "Read each of the statements below carefully and then circle the number that indicates your agreement with it".

Results and Discussion

Reliability and Factorial Structure of the Scale

The data were factor analysed using the principal - component analysis technique. As expected, one main factor emerged which accounted for 20.6% of the variance with an eigen value of 7.22. The eight remaining factors with eigenvalues[2] above 1(considered the minimum score for a factor) had eigenvalues below 2.2. According to the scree[3] test shown in Figure 2, only one factor was retained. As can be seen in Table 1 all items loaded positively and significantly on this first factor.

The internal reliability analysis confirmed the factor analysis results. The corrected correlations between the items and the scale total score are also provided in Table 1.

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[2] The eigenvalues reflect the amount of variance associated with a factor.
[3] The scree test looks at the trend of the eigen values to determine whether one or more factors exist. The scree plot is provided in Appendix 1

With a few exceptions, these are moderately strong and positive. The internal reliability coefficient (alpha) was .86. This result shows that the scale possesses adequate internal reliability and that it measures one construct - cognitive distortions related to driving offending.
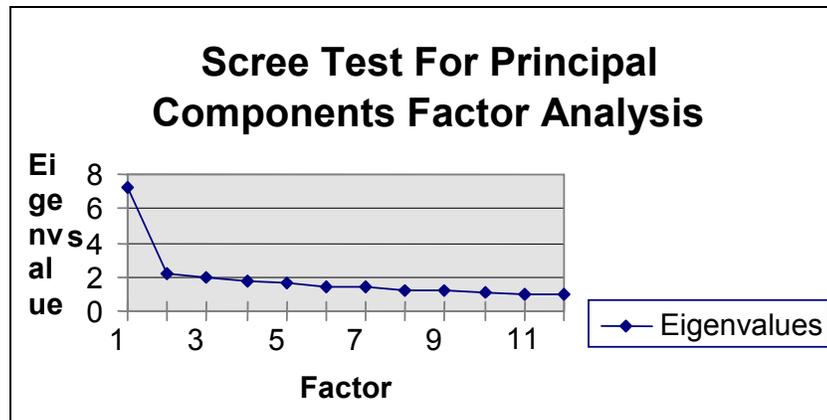

Figure 2: Scree Test For DOT Scale Factor Structure

Scale Item	Mean	SD	Factor Loading	Item Total Correlation
1. Public Transport is not expensive, so I don't have to drive*	3.42	1.27	0.32	0.30
2. When I am disqualified from driving and I drive I don't worry that the police will catch me.	3.71	1.44	0.42	0.36
3. I believe that most people that drive while disqualified get caught.*	3.35	1.37	0.40	0.34
4.When I have an argument with my partner I need to get out of the house so I have to drive.	3.29	1.44	0.65	0.56
5.I can get groceries without driving a car. *	3.78	1.34	0.38	0.32
6. I can't sit in the passenger seat of a car.	3.76	1.46	0.32	0.28
7.I can get to work without driving*	3.60	1.46	0.32	0.29
8. I see no reason why I shouldn't drive while disqualified.	3.50	1.45	0.42	0.37
9. Driving is the best way of dealing with my anger.	3.85	1.39	0.54	0.49
10. Alcohol affects my driving*	4.04	1.31	0.43	0.23
11. My partner can't drive so I have to.	3.61	1.38	0.55	0.49
12. No one else was around to drive me to where I had to go, so I drove myself	3.05	1.52	0.66	0.58
13. Even though I'm disqualified there are times when I legitimately have to drive.	2.78	1.47	0.50	0.44
14.Taxis are too expensive so I must drive my car.	2.99	1.38	0.68	0.62
15.When I drive I'm actually a much safer and more careful driver.	2.61	1.35	0.42	0.36
16.Being allowed to drive helps my relationship(s).	2.92	1.47	0.33	0.27
17. Only women let other people drive them places.	4.12	1.00	0.42	0.26
18.You don't have to drive to get a job.*	3.15	1.48	0.43	0.36
19. I wasn't thinking about anything except getting home.	2.65	1.20	0.39	0.33
20. I can relax without needing to drive.*	3.74	3.84	0.48	0.45
21. My kids can get to school without me driving them.*	3.85	1.14	0.46	0.42
22. Most people who are disqualified still drive occasionally.	2.16	1.07	0.33	0.24
23.Having cars around me means I will want to drive them.	2.72	1.38	0.57	0.42
24.Buses run often enough so I don't have to drive a car.*	3.42	1.36	0.42	0.51
25.When I'm at the pub I am the safest driver, so I have to drive my mates home.	3.80	1.23	0.42	0.35
26. I can be a really father and not drive my kids places (examples school, playground,beach)*	3.53	1.24	0.42	0.38
27.I need to drive the car occasionally otherwise its condition will deteriorate.	3.73	1.23	0.45	0.37
28.Driving helps me get away from difficult situations (example an argument with someone).	3.17	1.43	0.59	0.51
29.After a while I get sick of having to get mates to drive me around.	2.23	1.21	0.48	0.42
30. I had to drive everyone home from the party because they were all drunk.	3.36	1.43	0.61	0.56
31. I feel like a real man when I'm driving.	3.67	1.18	0.53	0.45
32.I can have a social life without driving.*	3.64	1.34	0.25	0.23
33.I took my family out int the car to stop them nagging me.	3.68	1.17	0.45	0.41
34. A lot of stuff had been going on at home and I had to drive to get away from it, so I drove.	3.19	1.39	0.53	0.46
* Item scored in the reverse				

Table 1: Means, Standard Deviations, Factor Loadings and Item-Total Correlations**.**

Test Retest Reliability

Introduction

Test - retest reliability refers to the consistency between two occasions on which an individual completes a scale. One of the problems with test - retest reliability is that if the time between tests is not long enough the person will remember what their answers were on the previous occasion. Generally, the longer the time between testing occasions the lower the correlation. The testing interval is usually kept short so that any changes that occur can be considered to be due to random errors in the test rather than developmental or experiential changes for the test taker. For example, a driving offender may have been to court for driving offending, or had a relationship fail, because of their driving, and as a consequence, their beliefs related to driving change. The longer the period between testing episodes, the more likely such changes are to occur. Anastasi (1976) recommends that the longest time between test and retest should not exceed six months.

Method

Two sets of data were collected for this study:
1) 26 non driving offenders were tested at an interval of 18 days;
2) 51 driving offenders who were not participants in the DOT programme were tested at an interval of 60 days.

The first set of data was gathered in groups of 4-8 offenders from men in a sex offenders unit. An offender group other than drivers was chosen both to test the reliability and to see if the scores of sex offenders were substantially different from driving offenders. This gave an opportunity to assess validity by a contrast group i.e. the cognitions about driving offending were different (presumably with more cognitive distortions) for driving offenders than sex offenders.

The second sample of 51 driving offenders was used as a control group against which the DOT participants' test scores could be compared. This second set of data was collected from both individuals and groups.

Both samples were drawn from prison inmates.

Results and Discussion

The correlation between first and second tests for the sex offenders was .75. This was considered acceptable. The test retest correlation for this group after 60 days was .63. Both correlations are significant and are acceptable given the long retest period for the second study, and that the scale is an attitudinal scale.

Validity

Introduction

The validity of a test encompasses what the test measures and how well it does so (Anastasi 1976). In practice,this involves determining the relationships between test scores and other independently observable facts about the behaviour or cognitions being measured. In the case of driving offenders' cognitive distortions, this means finding some observable evidence of such distortions and establishing the strength of the correlation between DOT scale scores and this evidence.

There are three principal ways of determining validity:

1) Content validity - how well the items cover the domain being measured
2) Criterion related validity - how well the test predicts a persons behaviour in a specific situation
3) Construct validity - how well the test measures a theoretical construct or trait.

For the DOT scale content validity was established by attempting to construct a representative sample of items that related to driving. Interviews with driving offenders were used to identify the specific beliefs they had that made driving easier for them. Many of the items were the actual expressions used by the offenders.

Construct validity is difficult to establish when cognitive distortions have in the past only been indirectly assessed through interviews. More important in assessing the validity of the DOT scale is criterion-related validity.

Criterion related validity is found by comparing performance on the test with a criterion i.e. an independent measure of that which the test is designed to predict. The relationship between the test and the criterion can be established by measuring the criterion either at the same time as the scale is used, which is called concurrent validity, or after the scale has been used, which is called predictive validity.

The following studies provide the results for the DOT scale concurrent and predictive criteria.

Concurrent Validity

Introduction

Concurrent validity refers to an independent criterion against which the DOT scores can be compared at the time of testing. The available criteria against which the DOT scale can be compared are largely limited to the traffic offence histories of offenders or their self-reports through interview. The use of interview information is problematic, as developing scoring procedures for such qualitative data is difficult. In addition,

interview information was not available for the two control groups or for the majority of the Driving Offender Treatment programme participants.

Wilson (1996) suggests that cognitive distortions about driving are involved in the relapse process of driving offenders. The relationship between DOT Scale scores and traffic offending should therefore be strong.

Method

The traffic and criminal histories of the driving offenders of the 51 DOT participants were obtained. This information was summarised so that the number of previous convictions for driving while disqualified and alcohol related driving were totalled. The correlations between driving offence variables and DOT scale score were then obtained.

Results and Discussion

The results of the correlations as well as the means and standard deviations for the traffic history variables are presented in Table 3.

Table 3

	R(X,Y)	p	n	Mean Conviction	STD	Mean Dot Score	STD Y
DWD-DOT	0.219	0.063	51	7.08	5.37	101.5	11.18
PEBA-DOT	0.336	0.003	51	3.27	3.27	101.5	11.18

Table 3: Correlation between previous DWD and EBA offending and DOT scale score.

The correlations show that the relationship between DOT score and previous DWD offending is approaching significance. A significant relationship exists between previous EBA offences and DOT score. The relationship with EBA offending suggests that driving cognitive distortions are more severe in offenders with extensive alcohol related traffic histories. If a larger sample was chosen it is likely that the DWD offending would also be significant. There is therefore some indication of the scale's concurrent validity. While the correlations are modest they do show that the construct of driving related cognitive distortions is associated with high levels of driving offending.

Predictive Validity

Introduction

Another form of criterion related validity is predictive validity. We can follow up the driving offenders who completed the DOT scale to see whether those with lower scores, indicating more cognitive distortions, were re-convicted more often.

Method

The 51 offenders for whom traffic histories were available were followed up for an average of 225 days. The time to the end of follow-up or to a new traffic conviction (if one occurred) was calculated. Survival analysis was then used to determine whether DOT scale score could predict survival time.

Results and Discussion

The results of the survival analysis for driving while disqualified and alcohol related driving presented in Table 4 shows that DOT scale scores did not significantly predict survival times, although the relationship did approach significance. The data were then re-analysed, after the DOT scores were grouped into four approximately equal categories[4]. The subsequent survival analysis is reported in Table 5

	Beta	Standard Error	t-value	exponent beta	Wald Statist.	p
Dotscore	-0.598392	0.325401	-1.838935	0.549695	3.381682	0.065934

Table 4: Survival Analysis of DOT Score for Time to Re-offence for driving while disqualified

	Beta	Standard Error	t-value	exponent beta	Wald Statist.	p
Dotscore	-0.575057	0.287979	-1.996875	0.562673	3.987508	0.045847

Table 5: Survival Analysis of DOT Score for Time to Re-offence for DWD following re-coding of Dot Scores into four categories.

The analysis demonstrates the predictive validity of the DOT scale when scores are grouped in this way, rather than treating them as measures on a continuous variable. A significant relationship can be seen to exist between the DOT scale score and subsequent traffic offending.

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[4] Kleinbaum (1997) suggests that continuous variables be recoded into categorical variables for the purposes of survival analysis.

General Discussion

The four studies have shown the following:

1. The internal consistency of the DOT scale is at acceptable levels (above .8) and there is a single construct being measured - cognitions related to driving offending.

2. The test retest reliability correlation with a control group of child sex offenders was considered acceptable at $r = .75$. The driving offender control group yielded an acceptable reliability score ($r = .63$) even though the time between tests was three times longer. The scale therefore does have acceptable reliability.

3. Criterion validity, using traffic conviction history as the criterion, produced a significant correlation for DOT scale score and previous EBA offences. The relationship with previous DWD offending approached significance.

4. Predictive validity, using time to subsequent DWD offending as the criterion, produced a significant relationship with grouped DOT scale scores. This showed that high scores on the DOT scale (indicating fewer distortions) are associated with longer survival times before offending.

The studies indicate the scale has some value as a tool to measure risk of re-offending for a DWD offence. The four categories used to establish predictive validity suggest that a cut-off can be set at a score of 125. Offenders above this are less likely to offend than offenders in the lowest group (scoring < 101 on the DOT scale).

The attempt to measure cognitive distortions with the DOT scale has met with some success. While the correlations and strength of the relationships are relatively small (although significant), given the developmental nature of the scale, the results are important. They do show the possibility of measuring driving offenders' cognitions with a self-report instrument.

The relationship between cognitive distortions and previous and subsequent traffic offending suggests that modifying these could reduce re-conviction. Bakker (1997) found a significant increase in DOT scale scores was found for those who completed the cognitive behavioural DOT programme for disqualified drivers.

Given that Wilson (1996) identified several different possible pathways that offenders followed in their relapse chain, there may be considerable variation in item scores depending upon the specific pathways different offenders follow. If offenders vary significantly here, this might add variance to scale scores, and sub-scales might be needed to reflect the differences. Only some of the pathways identified by Wilson involved explicit planning or decision making. It is possible therefore that many offenders may be unaware of the thoughts they have, and choices they make. Further data collection may provide some indications of whether the different pathways equate

to different items of the DOT scale. If sub-scales of the DOT scale were found, these could identify different intervention targets for offenders. Utilising Wilson's procedure and comparing scale scores would test this.

Wilson required considerable probing (three interviews) to obtain detailed descriptions of subjects' previous offences. The DOT scale was designed to reduce the time required for this process and to assist assessors in deciding upon the risk posed by offenders. The scale has some value in doing this.

Is the DOT Scale Good Enough?

The DOT scale has some support (including the theoretical work of Donovan, 1983 and Wilson, 1996) as a measure of cognitions relevant to driving offending. It was hoped that the scale would reduce the time needed to assess offenders' re-offending risk, and highlight the specific cognitive distortions that would be targets for intervention. The scale does this to some degree. While the relationship between the scale and offending is not strong, it is nevertheless significant, and takes considerably less time than an interview. The scale may also be a useful measure of treatment impact, indicating the change in driving offenders' cognitions over treatment.

More effort in the selection of scale items would have reduced the difficulties offenders had in gauging their level of agreement with the statements. Additional exploration of the awareness driving offenders have of their cognitions related to driving might also provide better scale items. This is particularly important if the schema that driving offenders have are largely automated, and if their awareness of the cognitive distortions associated with them is low, as Wilson's research suggests.

Conclusions

We have shown that the DOT scale has good internal and test-retest reliability. It also has significant criterion validity. This means that the scale measures cognitions consistently for driving offenders; and scale scores, when grouped into four bands, are related to traffic offending. The DOT scale therefore has some value for distinguishing high risk from low risk traffic offenders, although risk scales exist which are more accurate. The scale could have a use in measuring treatment change following a driving programme such as the DOT programme.

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Appendix 1: Wilson Model of the Re-offence Process of Recidivism for DWD Offenders in New Zealand

Stage One

Section One

Background Factors

Positive — Mixed — Negative

StageTwo

Selection of Coping Strategy in View of Current Life Circumstances

Poor Support Cognitive Distortions

Stage Three

Section Two

Active — Mood — Passive

Stage Four

Positive

Re-evaluation of selected Coping Strategy in View of Current Life Circumstances

Negative

Cognitive Distortions Disinhibitors-eg. Drugs, Current Mood

Stage Five

Section Three

Initial Decision to Drive

Explicit — Implicit

Planning

Poor Support Situational Factors Cognitive Distortions Disinhibitors-eg. Drugs, Current Mood

Stage Six

Planned — Unplanned

Implicit

Explicit

Reason for Driving

External

Stage Seven

Internal

Cognitive Distortions

Mood — Negative

Stage Eight

Positive

Stage Nine

Evaluation of Risk of Detection

Nil — Low — High

Stage Ten

Active High Awareness

Cognitive Manoeuvres

Passive Low Awareness

Driving Effect

Stage Eleven

Cognitive and Affective Evaluation white Driving

High Cognitive Negative (+) Affect

Low Cognitive Positive (-) Affect

Stage Twelve

Police Encounter

No — Yes

Section Four

No

Detected by Police

Yes

Stage Thirteen

Stage Fourteen

Evaluation of Driving Outcome

Positive — Negative

Cognitive Distortions Situational Factors

Stage Fifteen

Attitude to Continued Driving

Continue — Discontinue